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ABSTRACT

Findings in industrialized countries, such as those of Jencks and Coleman, indicate that socioeconomic status has a strong influence on academic achievement and that school effects are of lesser importance. This study of socioeconomic influences and school influences on the performance of 23,615 Ugandan children taking the Primary Leaving Examination (PLE) tests the validity of these findings for Uganda, a less developed nation. Participants representing socioeconomic cross sections of Uganda provided information about their parent's education, occupation, and types of personal possessions. Schools effects were gauged by teacher characteristics, by the ratio of books per child, and by the presence of various physical facilities in the schools. Findings were correlated with the PLE exam scores and compared with those for science education from the study by the International Association for the Evaluation of Educational Achievement (IEA). No correlation between PLE achievement and socioeconomic factors was discovered. The effect of school, teacher, and book variables explain 30-50 percent of the "accounted for" variance. Results with respect to socioeconomic influences are not inconsistent with the results among the less industrialized countries in the IEA study. These findings in Uganda caution the use of the Coleman and Jencks data for decision making in less developed societies. (JH)

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Influences on Academic Achievement: A Comparison of Results from Uganda and More Industrialized Societies

A Paper Prepared for the Symposium On The Determinents of Academic Achievement: Perspectives Between Industrialized and Non-Industrialized Societies, at the Annual Meeting of the American Education Research Association, April, 1975 (22-04)

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We are gathered here to pursue enlightenment on two questions: The first is whether, from the recent evidence we have before us, the relationship between academic achievement and socio-economic status is as strong in the lesser as it is in the more industrialized societies. The second is whether there are particular school effects which have more impact upon measures of cognitive achievement than one would otherwise expect given the results from the Coleman, Jencks, Plowden, IEA, and other well-publicized survey research literature.

These questions belong to a small genre of intellectual activities which meet two, often mutually exclusive, criteria for value. First, these two questions are interesting; they stir-up one of the more substantive theoretical issues in the social sciences--whether the tendency for children spread over social strata to perform differently is equally universal among differing human societies. But simultaneously, they meet a second criteria of value, that of functionality. They pose a serious response to those within economic and governmental circles who are involved in economic development, and who would ask justifiably whether we should invest in formal schooling, and if so, how.

Socio-Economic Status and Academic Achievement

Ample evidence exists from industrial societies which would lead one to expect that children of lower socio-economic status backgrounds might perform less well on an average in tests of academic achievement. Of all the variables included, the attempt to quantify the effects of social privilege, is perhaps more consistently correlated with present test performance than any other measure in or outside of schools.[1]

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However, despite the fact that there are noteworthy dispersions away from the mean among industrial societies,[2] the positive correlations and the sizable effect of socio-economic status in the regressions have dominated the discussions in each of the IEA publications.[3] On the other hand, of the nineteen nations surveyed in the science report, all but four would have to be categorized as industrialized societies. Given the fact that the effect of socio-economic status is not of uniform strength even within them, the question is left very open as to how far the relatively strong relationships found on an average in industrial societies might be generalized to societies on the other end of the spectrum of industrial development. It was in response to this question that I have made an attempt to understand why some children in Uganda at the primary school level out-perform others on their nationally-administered academic Primary Leaving Examination.

The Ugandan Findings

The Ugandan sample consisted of a random selection of sixty-seven primary schools from five districts (North and South Karamoja, West Buganda, Bugisu, and Toro), and all three of the country's urban areas (Kampala/Entebbe, Mbale/Tororo, and Jinja). Within each of these a list of schools with a primary grade seven was obtained,[4] and a minimum of ten percent of these schools was randomly selected for study. The final sample represented an average of 10.7 percent of the schools, 13.1 percent of the grade seven children, and 12.9 percent of the teachers within the selected areas. Table 1 shows this and compares the sample with the total number of schools in Uganda. By choosing areas of isolated but economically developed, isolated but economically poor, urban, plantation and peasant agricultural areas, areas of heavy manufacturing and commerce, and areas of relative isolation from modern stimuli, I hoped to

TABLE 1

NUMBER AND PERCENT OF SCHOOLS, CHILDREN AND TEACHERS IN THE SAMPLE DISTRICTS AND IN UGANDA[a]

District	Number of P7 Schools	Number of P7 Pupils	Number of Teachers	Percent of P7 Schools In Sample	Percent of P7 Pupils In Sample[b]	Percent of Teachers In Sample
Toro	126	4,475	775	11.9	14.4	18.4
Bugisu	153	6,816	862	10.0	9.1	16.1
West Buganda	197	4,330	1,937	10.2	19.7	9.6
N. Karamoja	13	603	347	15.4	16.2	10.4
S. Katamoja	19	943	c	10.6	8.0	c
Kampala	81	4,852	411	10.0	8.9	21.1
Jinja	12	852	160	16.6	14.4	13.5
Mbale	14	755	151	21.3	d	d
Sample	615	23,624	4,643	10.7	12.6	12.9
Uganda Total	12,615	108,096	20,004	2.6	2.8	3.0

[a]Calculated from: Ministry of Education, Education Statistics (Entebbe: Uganda Government Printer, 1968), Table 17.

[b]The percent of those in the sample who sat for the Primary Leaving Examination eight months after the administration of the sample questionnaires is approximately one quarter less.

[c]The above figure includes both North and South Karamoja.

[d]The above figure includes both Mbale/Tororo and Jinja Townships.

have located as wide a variety of environments as Uganda contained. Political and economic considerations prevented me from gathering a totally representative national sample. But because I chose my five districts and three urban areas to insure maximum variation, there is reason to believe that the summary indicates some of the major socio-economic factors that are associated with variable Primary Leaving Examination performance in Uganda.

In ascertaining the association between pupil social status and academic achievement, I elicited information from each child on his parents' education, occupation, and the number of possessions found in his home from a select pretested list of modern consumer items.[5] These variables were also placed in a summary socio-economic scale. Occupation was measured by asking each child individually the following question: "How does your father earn money"? But since many fathers earned money performing a variety of tasks, (fishing, raising goats, and repairing bicycles for example) each of these tasks was noted. Later, each was coded into five levels of renumeration and the child's father was assigned to the highest level of his sometimes multiple occupational endeavors.

Since I have reported these socio-economic status findings elsewhere,[6] I will be brief on this occasion. These data indicate that there is no relationship between a child's socio-economic background and his academic achievement on the Ugandan Primary Leaving Examination (Table 2). The correlation between academic achievement and paternal education attainment was only .07; between achievement and material education attainment .02; with the number of modern possessions reported in each pupil's home only .03; with paternal occupation only .06; and with the summary measure of the four socio-economic status variables only .05. These varying measures, even after being controlled

for sex, intelligence, and school district selectivity, yield consistent results. The fact that a child comes from a higher socio-economic background in which his parents have received more formal education, or in which his

TABLE 2

CORRELATION COEFFICIENTS BETWEEN INDIVIDUAL SOCIO-ECONOMIC STATUS AND INDIVIDUAL ACHIEVEMENT SCORES

(N=2,293)

Mother's Education	.02
Father's Education	.07
Father's Occupation	.03
Possessions in the Home	.06
Summary Socio-economic Status[a]	.05

[a]Summary socio-economic status was computed by summing each child's mother's education, father's education, the reported number of possessions in the home, and the reported paternal occupational status category.

father has a better paying, more secure income, or in which his home contains a greater number of modern possessions, does not necessarily mean that a child will score better on a test of academic achievement.

The question now remains as to whether these deviant Ugandan findings are spurious; but recent evidence from other studies in sub-saharan Africa would indicate that they are not. Two others in Uganda have included socio-economic variables. Although in Jonathan Silvey's small 1963 study in Kampala he reported a "marked tendency for sons of higher socio-economic parents to perform well on a test of mental alterness," he has later modified his conclusion and has asserted thatparental education is not related to scholastic performance in "any meaningful way."[7] In her 1974 study of three secondary

school cohorts, Janice Currie reports an almost random correlation between paternal socio-economic status and Cambridge School Certificate performance in the years 1954, 1959, and 1964.[8] Low or random correlations between socio-economic status and Kenyan Cambridge School Certificate performance are also reported in the 1974 dissertation by Jerry Olson.[9] Yet perhaps even more significant is Murphree's Rhodesian finding that superior secondary school performance is obtained by children of illiterate homes than from children of the more privileged.[10]

Studies of African children on the primary school level have reported similarly deviant results. In the dissertation by Mebo K. Mwaniki, correlations of .09, -.03, and .01 are displayed between Kenyan mother's education and the achievement scores of children in four primary schools in tests of English, math, and general knowledge.[11] Nor in a study of Kenyan primary schools on the macro-economic level by her husband, was there any relationship found between these variables.[12] In addition, Margaret Peil, reporting from Ghana, has recently said that her "data show that examination success is by no means all due to social advantages and, in the case of parental education, the differential is the reverse of what was expected."[13]

The Weight of Preschool Influences: A Comparison of Ugandan and IEA (Science) Results

These individual studies in Africa may not be inconsistent with the results of the preschool influences of the four lesser industrialized societies included within the IEA report on science achievement. Most of us are now familiar with the five blocks of variables employed in the IEA studies to estimate the influences on academic achievement. The first block always consisted of the variables Sex, Age, and SES. Since no curriculum tracking could be

found in Uganda however, there was no need of the IEA's second block; the resulting four block Ugandan model[14] is displayed in Table 3.

Block 1, consisting of Sex, Age, and SES of the pupil, accounted for a total of 4.8 percent of the variance in achievement. When this is rounded off and placed along-side the Population II results of the IEA study on science achievement,[15] the weight of these preschool influences in Uganda appear higher than the three percent reported for India, equivalent to that of Iran, but lower than fifteen out of seventeen countries reporting similar data on the equivalent age group. Table 4 illustrates these facts in the top row which compares the proportion of variance explained by preschool influences and the proportion explained by the identical block of Ugandan variables. In the second, third, fourth, and fifth rows, Table 4 displays four measures of social and economic development: Gross National Product Per Capita, Gross National Product Growth Rate, Percentage of Children in Primary Schools,[16] and the Percentage of Children in Secondary Schools.

On closer inspection of Table 4, one tendency becomes increasingly evident: the more industrialized a society becomes, the more a child's achievement in school is likely to be affected by his socio-economic environment and other preschool influences. For example, when one good measure of a nation's level of economic development, such as the percentage of children in secondary school, is plotted against the effect of Block 1 on achievement (Table 5), one notices a tendency toward linearity. The higher the percentage of a nation's age cohort in secondary school, the greater the percentage of achivement variance explained by preschool influences.

TABLE 3

BASIC UGANDAN MODEL SHOWING THE EFFECTS OF THREE VARIABLE BLOCKS ON ACHIEVEMENT

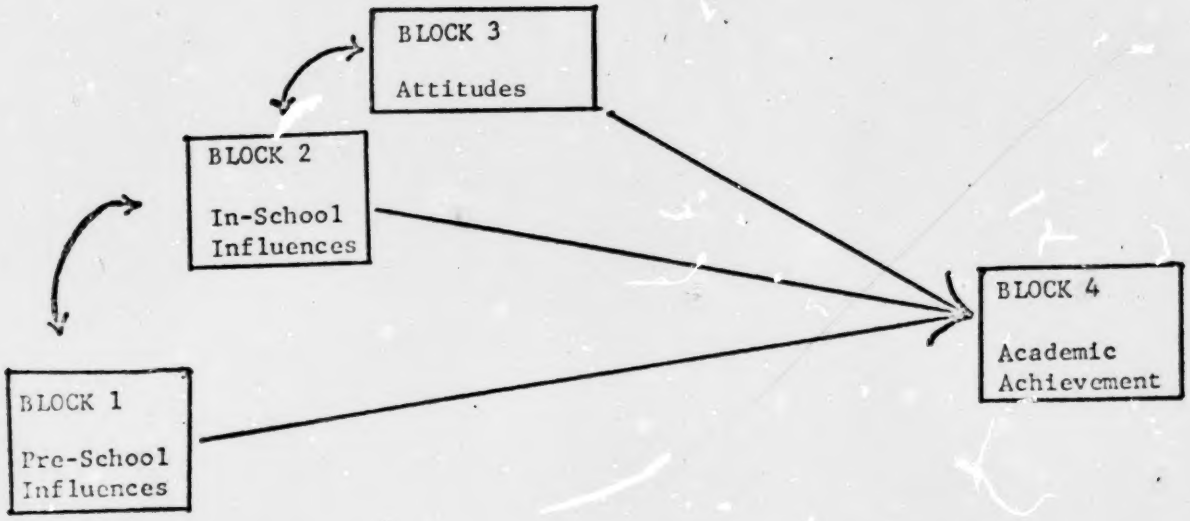

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TABLE 4

ACHIEVEMENT AND SOCIO-ECONOMIC DATA
FOR 18 SELECTED COUNTRIES

	Scotland	Japan	England	USA	Finland	Netherlands	Sweden	Fed.Ger.Repub	New Zealand	Australia	Hungary	Chile	Italy	Thailand	Belgium(Fr.)	Iran	India	Uganda
Preschool Influences on Achievement	29	23	23	22	22	19	18	18	17	16	14	13	10	10	8	5	3	5
GNP[b] Percapita (1971)($000)	2.4	2.1	2.4	5.2	2.6	2.6	4.2	3.2	2.5	2.9	1.2	.8	1.9	.2	3.0	.5	.1	.1
GNP[b] Growth Rate (1965-1971) (Percent)	1.8	10.4	1.8	1.9	4.6	4.2	3.9	4.2	1.6	3.3	5.9	2.4	4.6	4.7	4.5	7.7	2.4	1.6
Percent in[c] Primary School (Ages 6-11)	97	98	111	102	101	103	94	127	106	107	102	105	108	81	111	60	56	51
Percent in[c] Secondary School (Ages 12-16)	42	86	72	100	69	62	94	66	56	77	31	31	54	13	-	21	15	5

[a]SOURCE: L.C. Comber and John P. Keeves, Science Education in 19 Countries: An Empirical Study, (Stockholm: Almqvist and Wiksell, 1973), p. 261.

[b]SOURCE: World Bank, Atlas of Population, Percapita Product, and Growth Rates, (Washington, D.C.: International Bank for Reconstruction and Development, 1973).

[c]SOURCE: United Nations Education, Science and Cultural Organization, Statistical Yearbook, (Paris: UNESCO, 1970).

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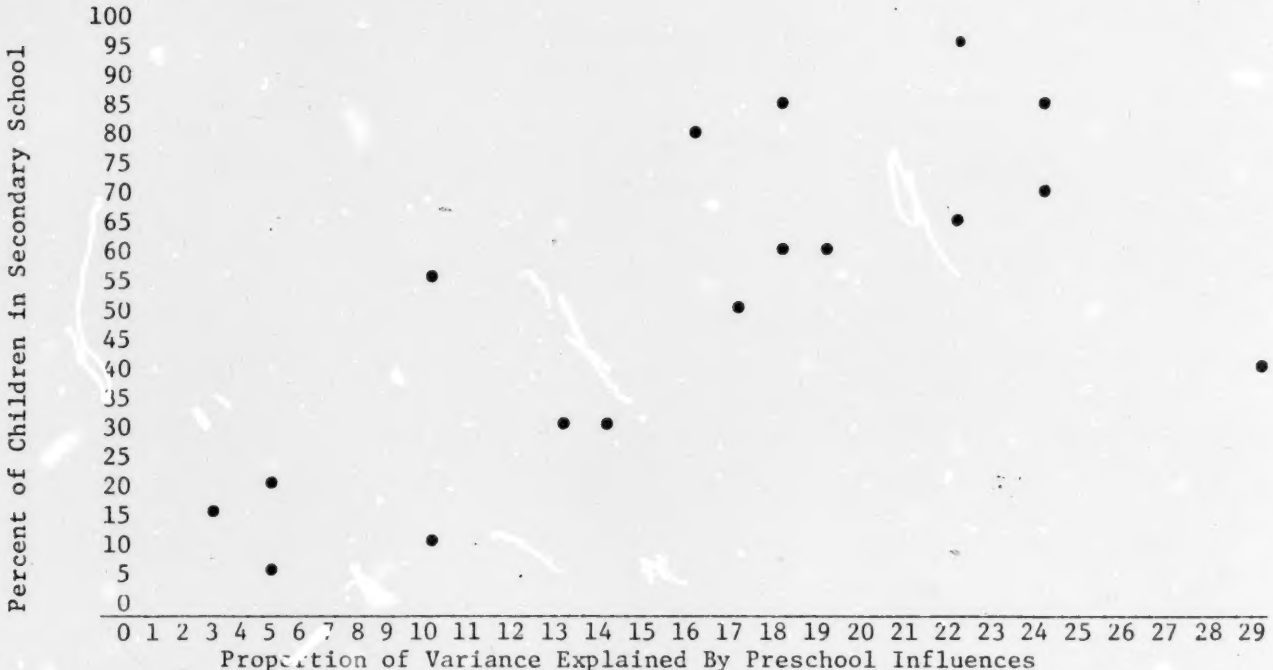
TABLE 5

PERCENTAGE OF CHILDREN IN SECONDARY SCHOOL AND THE INFLUENCE OF PRESCHOOL VARIABLES ON ACHIEVEMENT IN 17 NATIONS (INCLUDING UGANDA)[a]



[a]SOURCE: L.C. Bomber and J.P. Keeves, Science Education In 19 Countries: An Empirical Study (Stockholm: Almqvist and Wiksell, 1973), p. 261. The percentage of children in secondary school was not available for one country.

test this further, the data on the national product, the economic growth rate and the percentages of children in schools were correlated with the proportion of variance explained by preschool influences (Table 6). It is obvious here that there is an association with three of the four economic indicators. The correlation between these influences and percapita income is .669 ($p < .002$); with the percent in primary schools .503 ($p < .002$). This is one indication that in the more wealthy nations, the national level of achievement is more affected by preschool social milieu. However, there is no indication of any association between the rate of growth of GNP and the effect of

preschool variables on achievement, perhaps indicating that the social effects of industrial growth on academic performance occur slowly, and only over many generations.

TABLE 6

CORRELATIONS BETWEEN THE EXPLANATORY POWER OF PRESCHOOL VARIABLES ON ACADEMIC ACHIEVEMENT AND FOUR MEASURES OF ECONOMIC DEVELOPMENT

(N=18)

Per Capita Income[a]	.669 [$p < .002$]
Percent GNP Growth Rate[a] (1965-1971)	-.004 [N.S.]
Percent of Age Cohort in Primary School[b]	.503 [$p < .03$]
Percent of Age Cohort in Secondary School[b]	.706 [$p < .002$]

[a]SOURCE: World Bank, Atlas of Population, Per Capita Product, and Growth Rates, (Washington, D.C.: International Bank for Reconstruction and Development, 1973).

[b]United Nations Education, Scientific and Cultural Organization, Statistical Yearbook (Paris: UNESCO, 1970).

However, in order to generalize with confidence from the above correlations, two additional sources of achievement variance data are needed: data from socialist nations whose stated social policy is to minimize the inheritable effects of privileged status, and additional data from lesser developed nations. But from the impact of these recent studies, especially those I have reported from sub-saharan Africa, I would suggest that the phenomenon of differential socio-economic academic performance reported from industrial societies must not be automatically assumed to prevail in societies which are at the opposite end of the industrial spectrum.

The Effect of the Ugandan Primary School on Academic Achievement

In the Ugandan study, school effects were measured by combining the characteristics of teachers with those of physical facilities.[17] Judging from the summaries of studies in industrialized societies, the effects might be expected to have been minimal.[18] And indeed, of the six characteristics of teachers displayed in Table 7, most had little or no association with academic performance.[19] It is apparent that there is only one teacher measure which is significantly associated with achievement. The quality of a teacher's English

TABLE 7

MEAN SCHOOL TEACHER CHARACTERISTICS AND THEIR CORRELATIONS WITH MEAN SCHOOL ACHIEVEMENT

(N=67)

Total Years of Schooling	-.112 [N.S.]
Teaching Salary Status Grade	.09 [N.S.]
Frequency of English in the Childhood Home	-.198 [N.S.]
Teaching Experience	-.03 [N.S.]
Parental Education	-.135 [N.S.]
English Language Competence	.307 [$p < .01$]

is the most outstanding measured characteristic. The amount of training teachers receive, their salary status grade, experience, parental schooling, and the frequency of English spoken in their childhood home have no significant impact upon the mean achievement of their primary school. If teachers make any difference to a school's academic achievement, it is most likely expressed through the quality of their English language ability.

Given these results, the correlations between a school's physical facilities and its academic achievement appear somewhat more consistent. For example, I made a count of each textbook, each reader (in English and the vernaculars), workbook, reference and teacher's book in each of the eight academic subjects in grade seven. I summed these books and divided the totals by the number of pupils enrolled in the class. The resulting ratio of books per child was then correlated with mean school achievement and the coefficient of $r = .242$ ($p < .06$) indicates an association worthy of some note. But in addition, I found out whether or not the school had a duplicating machine, a farm, staff room, electricity, boarding facilities, or football field (hockey in the case of a girl's school). I also noted whether or not window frames (present in all schools) were filled with glass. I hypothesized that each of these physical characteristics might have some positive relationship with academic achievement, and I was not disappointed. Table 8 illustrates the frequencies and their correlations. Though the correlations range from a low of .081 to a high of .330, it appears as though a consistent tendency has been monitored in a positive direction with academic achievement.

TABLE 8

THE PRESENCE OF PHYSICAL FACILITIES AND THEIR CORRELATIONS WITH MEAN SCHOOL ACHIEVEMENT

(N=67)

Physical Characteristic	Percentage of Schools Possessing Each Facility	Correlation With Mean School Achievement
Duplicating Maching	74.5	.330 [$p < .001$]
School Farm	37.3	.225 [$p < .001$]
Boarding Facilities	8.9	.190 [$p < .01$]
Electricity	20.9	.166 [$p < .03$]
Football Field	80.5	.121 [$p < .08$]
Glass Windows	25.3	.102 [N.S.]
Staff Room	44.7	.081 [N.S.]
Summary of the Above Characteristics	--	.292 [$p < .01$]

Combined School Effects

The first purpose of regression analysis is to understand the proportion of variance which can be explained by quantified characteristics. In the social sciences, however, where research must eventually measure characteristics as they occur in human society, the roughness in the measures limits the total amount of variance which can be explained to less than what might be affected in the biological or physical sciences. Even as well-known a characteristic as socio-economic status in the U.S. can nullify the inquality in test performance by an average of only six percent.[20] Though the IEA studies were supplied with ample technical assistance, the sum of all their measures never accounted for more than 60 percent of the achievement variance, leaving 40 percent in the best of cases and well over 50 percent in most cases, unexplained. This comment on the "state of the art" is not an argument against the utility of regression models, but it might instill some solace to those who are apt to be discouraged by discovering smaller proportions of variance explained than would have been realistic.

One method of circumventing the problem for purposes of planning and illustration is to reflect not upon the proportion of variance explained, but upon the proportion of explained variance. The proportion of explained variance is that portion of variance for which one can account. For example, if the total variance explained is 20 percent, the proportion of explained variance would be that portion of the 20 percent. This has been done for purposes of considering the combined effects of the Ugandan primary school on PLE achievement.

When the three school variables of P7 Books, Teacher English Quality, and the above Summary of Facilities are entered into the regression as the Block 2 portrayed in Table 3, their combined effects account for a total of 31.7 percent of the explained variance.[21] Furthermore, if one assumes that a child's attitudes about himself result in part from his activities in school, then these effects of the Ugandan primary school can be even further boosted by the approximately 20 percent of the explained variance accounted for by a measure of these pupil attitudes in Block 3 of the Ugandan model.[22]

Thus, given a model similar to that used in the IEA studies, of all the variance accounted for, between a third and 50 percent can be attributed to the Ugandan primary school itself. This may be an underestimate because some critical elements of the school such as teacher's attitudes were not included, and preschool influences may have been unduly weighted by being entered into the regression first. But nevertheless, the effects attributed to the Ugandan primary school are not at all inconsiderable--and may be worthy of the attention of those who search for an optimistic prognosis for potential investment policies. Most crucial for their purposes I believe to be the results of textbooks and teacher language ability; these two stand out as possibilities for experiment.

In sum, based upon the results from Uganda, I have these reactions to the questions originally posed for this symposium: First, as to whether the relationship between socio-economic status and academic achievement is as strong in the lesser as it is in the more industrial societies, I would say no, not necessarily. Second, as to whether there are particular school effects which have more impact upon measures of cognitive achievement than one would

otherwise expect given the results from the industrial society survey literature, I would say at least for Uganda, yes.[23] But whatever the eventual conclusion may be when more of these nuclear data are collected, the results from Uganda would certainly support Ernesto Schiefelbein's plea for caution[24] when making investment decisions in less developed societies based upon the Coleman or Jencks data.

FOOTNOTES

[1]This would exclude the consistently strong effects of performance on parallel measures of cognitive achievement such as intelligence tests or past academic behavior.

[2]Perhaps C. Arnold Anderson was among the first to document this fact with his report on the earliest of the IEA studies, that of achievement in mathematics across twelve nations. "The zero-order correlations with parental occupation or schooling varies considerably among IEA countries," he says. "For father's occupation, the correlations with thirteen year scores vary from .19 to .38, for father's schooling the range is .06 to .40, and for mother's schooling from .04 to .32 .... The IEA also show the elite mass disparity itself varies among societies and the populance in some countries excels the elite in others." C. Arnold Anderson, "The Reflection of Societal Characteristics Within the School," in Toward a Cross-Nation Model of Educational Achievement in a National Economy: The Report of the Lake Mohonk Conference, ed. by Donald E. Super (Stockholm: Almqvist and Wiksell Publishers, forthcoming).

[3]S. Shimada et. al., International Survey of Science Education: Report of the Japanese National Commission of IEA, Volume I, (Tokyo: National Institute for Educational Research, March, 1973); Glyn E. Lewis, International Studies in Evaluation IV: English as a Foreign Language in 10 Countries, (Stockholm: Almqvist and Wiksell, 1974); John B. Carroll, International Studies in Evaluation V.: French As A Foreign Language in Seven Countries, (Stockholm: Almqvist and Wiksell, 1974); R.F. Farnen, S. Marklund, A.N. Oppenheim and Judith V. Torney, International Studies in Evaluation VI: Civic Education in 10 Countries, (Stockholm: Almqvist and Wiksell, 1974); Harry A. Passow, Harold J. Noah, and Max Eckstein, International Studies in Evaluation VII: The National Case Study: An Empirical Study of Twenty-One Educational Systems, (Stockholm: Almqvist and Wiksell, 1974); Gilbert F. Peaker, International Studies in Evaluation VIII: An Empirical Study of Education in Twenty-One Countries: A Technical Report, (Stockholm: Almqvist and Wiksell, 1974); Alan Purves, Literature Education in 10 Countries, (Stockholm: Almqvist and Wiksell, 1973); L.C. Comber and John P. Keeves, Science Education in 19 Countries: An Empirical Study, (Stockholm: Almqvist and Wiksell, 1973); Robert L. Thorndike, Reading Comprehension in 15 Countries: An Empirical Study, (Stockholm: Almqvist and Wiksell, 1973); see also the first published volume by Thorston Husen (ed.) International Study of Achievement in Mathematics: A Comparison of 12 Countries, Volumes I and II, (Stockholm: Almqvist and Wiksell, 1967).

[4]Schools which did not progress as far as P7 were, therefore, eliminated from the possibility of being included in the sample.

[5]The items consisted of the following: bed, newspaper, bicycle, radio, clock, motorcar (or lorry), camera, and television.

[6]"Socio-Economic Status and Academic Achievement in Uganda: How Fair Is the Primary Leaving Examination to the Less Privileged," Paper Presented at the Annual Meeting of the Comparative and International Education Society, Washington, D.C.: March, 1974; and "A Brief Note on the Relationships Between Socio-Economic Status and Test Performance Among Ugandan Primary School Children," Comparative Education Review (forthcoming, 1975).

[7]Jonathan Silvey, "Testing Ability Tests," Issues in the Measuring of Abilities Among African School Boys," East African Institute for Social Research, 1963 [mimeographed]; "Long Range Prediction of Educability and Its Determinents in East Africa," in Mental Tests and Cultural Adaptation, ed. by L.J. Cronback and P.J.D. Drenth (Paris: Mouton Publishers, 1972).

[8]Janice Currie, "Stratification in Uganda: Schooling and Elite Recruitment," Greylands Educational Journal, 9 (1974), 26-42.

[9]Jerry B. Olson, "Educational Change in Kenya: 1961-1968," (unpublished Ph.D. dissertation, University of Chicago, 1974).

[10]Betty Jo Murphree, "Factors Influencing the Aspirations and Achievement of African Secondary School Pupils in Rhodesia," in ASSA Sociology Southern Africa 1973: Papers from the First Congress of the Association for Sociologists in Southern Africa (Durban: University of Natal Multi-Copy Centre, 1973), 129-157.

[11]Mbo Kubeta Mwaniki, "Relationship Between Self-Concept and Academic Achievement in Kenyan Pupils," (unpublished Ph.D. dissertation, Stanford University, 1973), p. 130.

[12]Dinguri N. Mwaniki, "Education and Socio-Economic Development in Kenya: A Study of the Distribution of Resources in Kenya," (unpublished Ph.D. dissertation, Stanford University, 1973), p. 91.

[13]Margaret Peil, "Secondary Education in Ghana: Private Enterprise and Social Selection," Sociology of Education (forthcoming), p. 12 [mimeographed].

[14]First a cautionary note. Using any of the IEA studies as comparison to the Ugandan study raises methodological concerns which warrant some comment. There are four basic differences. First, each IEA achievement test was specifically devised for a special cross-national study of diverse countries; the Ugandan PLE was administered as a selection examination specifically for Ugandan children. Thus, Ugandan children sat for the PLE with the knowledge that the examination was to be used for selection purposes, perhaps creating additional motivation to achieve. Children of the IEA studies took the tests with the knowledge that their scores were to be used solely for research purposes. Second, the IEA studies are "subject-specific" i.e.: science, literature, reading comprehension, etc.; the Ugandan study takes a summary achievement score as its basic dependent variable. Third, the IEA equivalent population (Population II) is limited to age 14. The Ugandan study draws from all children in P7 whose mean clusters around age 14, but who in fact range from age 10 to age 18. Fourth, the IEA studies were administered indirectly, with "national teams" requesting information by mail from the different schools which fell into the samples. Variations in energy and experience between the national teams, the probability of bias due to the absence of on-site inspection, added to the distance between the authors of the research reports who rarely received the opportunity to view the schools from which their data had drawn, differentiates a methodology necessitated by multi-national requirements. In the Ugandan study, I gathered the data from each of the 67 schools in the sample, therefore making the final author responsible for the reliability of its collection. Despite these four contrasts, however, there is value in being able to place the Ugandan results in a comparative context. A common effort is to evaluate the effect of school influences on academic performance, and I suggest that a number of sufficiently parallel characteristics have been utilized to warrant a comparison.

[15]The science study was chosen because it covered data from more nations than the studies on literature, reading comprehension, English and French as a foreign language, or civic education.

[16]Nations with high rates of primary school repeating display figures in excess of 100 percent.

[17]By necessity this had to leave out the possible influences of school district administration which can be of crucial importance to the distribution of both personnel and supplies. See Stephen P. Heyeman, "Changes in Efficiency and in Equity Accruing from Government Involvement in Ugandan Primary Education," African Studies Review, (forthcoming), 1975.

[18]Frederick Mosteller and Daniel P. Moynihan, "A Path-Breaking Report: Further Studies of the Coleman Report," On Equality of Educational Opportunity, ed. by Frederick Mosteller and Daniel P. Moynihan (New York: Vintage Books, 1972), p. 20. George W. Mayeske, "Teacher Attributes and School Achievement," in Do Teachers Make a Difference: A Report on Recent Research on Pupil Achievement (Washington, D.C.: United States Department of Health, Education, and Welfare, 1970), pp. 100-120. Peter Rossi, "Social Factors in Academic Achievement: A Brief Review," in Education, Economy and Society, ed. by A.H. Halsey, Jean Floud, and C. Arnold Anderson, (New York: The Free Press, 1961), p. 270.

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[19]These teacher characteristics have been aggregated to the level of the school.

[20]Christopher Jencks, Inequality: A Reassessment of Family and Schooling in America (New York: Basic Books Incorporated, 1972), p. 109.

[21]In this particular model which conforms to that of the IEA studies for purposes of comparison, the total variance explained is 10.1 percent. This omits the variables of intelligence, selectivity of school access, and previous academic performance--all of which were measured and used in other models.

[22]If the variable sex is excluded from Block 1, then the effect of these school characteristics becomes still more pronounced. Block 2's effect would rise from 31.7 to 50.0 percent of the explained variance and pupil attitudes from 20 to 44 percent. Thus, considering only males or only females would raise the sum of the effects of the school to somewhere between 50 and 94 percent of the variance explained in the IEA model.

[23]Unlike preschool influences (Table 6), the aggregated effects of school learning conditions (Block 3 in the IEA and Block 2 in the Ugandan model) may not be that much stronger in the lesser industrialized societies. It correlated with only one of the measures of economic development (percent of children in secondary school, $r = .153$), but was insignificant statistically ($P < .558$).

[24]Ernesto Schiefelbein, "The Jencks Impact on Developing Countries," Paper Presented at the "Workshop on the Economics of Education: Alternative Strategies for Investment," (Washington, D.C.: World Bank, October 10-12, 1973) [mimeographed].